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# United States Patent [19]

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Krall et al.

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- [54] **METHOD AND APPARATUS FOR DISPENSING FLUIDS**
- [75] Inventors: **Michael L. Krall**, El Cajon; **David P. Caird**, Santee, both of Calif.
- [73] Assignee: **Innovative Medical Services**, El Cajon, Calif.
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*Primary Examiner*—James P. Trammell  
*Assistant Examiner*—Cuong H. Nguyen  
*Attorney, Agent, or Firm*—Jaquez & Associates; Martin J. Jaquez, Esq.

### Related U.S. Application Data

- [63] Continuation-in-part of application No. 08/814,621, Mar. 10, 1997.
- [51] **Int. Cl.<sup>7</sup>** ..... **G06F 19/00**
- [52] **U.S. Cl.** ..... **702/55; 702/50; 702/52; 702/100; 137/101.25**
- [58] **Field of Search** ..... 702/100.5, 52, 702/55; 137/487.5, 625.65, 898, 488, 101.25, 896-897; 73/149; 222/52, 61

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### [57] ABSTRACT

A method and apparatus for dispensing fluids in response to a user request for a specified amount of the fluid. A microprocessor opens and closes a fluid port for predetermined amounts of time to control the amount of fluid dispensed. The microprocessor monitors the elapsed time and the amount of fluid that has been dispensed since the last time the filter was serviced. In one preferred embodiment, the amount of fluid that is dispensed is measured by continuously monitoring the volume of fluid flowing through the apparatus. A pressure measurement device allows the microprocessor to monitor the fluid pressure. The microprocessor prevents fluid from being dispensed if the pressure is not within a predetermined range of tolerances. The fluid port is opened and closed by activating and deactivating a solenoid. A keypad allows the user to input the amount of fluid that is to be dispensed. A "Wait" period is imposed between the time that the user initiates the first stage and the time the user may initiate the second stage. The microprocessor does not open the fluid port if a "Failure" condition exists. An LCD is provided to display the amount of fluid that the user has requested. In an alternative embodiment, a bar code scanner or other input device allows the user to automatically input the amount of fluid that is to be dispensed.

**26 Claims, 11 Drawing Sheets**

